IOWA DEPARTMENT OF TRANSPORTATION

TO OFFICE District 4 - Atlantic **DATE** July 13, 2007

ATTENTION Jim Bane, DMM - Atlantic **REF. NO.** 602.11

FROM Scott Neubauer

OFFICE Bridges and Structures

SUBJECT Bridge No. 7803.2S006 FHWA No. 43130
A 2,114' x 52' Concrete Slab/Steel Beam
Carrying US 6 over CC & UP RR's, City Streets, & Indian Cr. Conduit and
Located in Council Bluffs, 3.2 mi. E of Nebraska State Line

The field inspection of the above bridge, which was constructed in 1955, was completed by Bridge Inspection Team No. 5. They reported the condition as follows:

Roadway Under Bridge/Waterway - US 6 over the Chicago Central & Union Pacific Railroads, local streets, and the Indian Creek Conduit. The CC Railroad is located in Span #26 and the UP Railroad in Span #33. The city streets are in Spans #23, #29, and #39; and the Indian Creek conduit is in Span #22.

The concrete lined waterway in Span #22 is satisfactory.

Structure Layout - The structure is made up of two cellular, concrete slab approach units (320' and 400' long) and a 1394' continuous, steel beam main span unit. The cellular units consist of a concrete slab supported by pile bents and concrete sidewalls. The sidewalls also have footings that are supported on piles.

There is a 200' long retaining wall unit at each end of the bridge.

Substructure - The bents for the cellular units are steel shell cast-in-place concrete piles with concrete caps except for Piers #20 and #39 which are full height concrete abutments that support the end cellular slab on their backwalls and the end spans of the steel beam main span unit on their seats. The eighteen main span Piers, #21 through #38, are open three column concrete cantilever. All of the substructure elements for the main span unit are supported on piling. The bearing devices over Piers #21, #27, #33, and #38 are fixed. The other main span bearing devices are rockers. Piers #20, #23, #24, #25, #31, #35, and #39 were patched with shotcrete in 1987. Piers #20, #23, #31, #35, and #39 were patched with PC concrete in 2002.

There is considerable hairline map, random, and vertical cracking in the sidewalls of the cellular units. The right sidewall of the west cellular unit has large hollow and spalled areas along the construction joints at the even numbered bents. Both sidewalls of the east cellular unit have large hollow, spalled, and scaled areas with exposed steel along several joints at the odd numbered bents. These areas are a little larger in 2006.

The ends and the seat of Pier #20 have been patched with PCC. However, the east face of this pier has delaminated areas about 1 sq. ft. in size and crazing below Beams #1 and #2, and below the PCC patch at the right end. There is a small spall, a small area of severe scale, and a 1 sq. ft. delaminated area on each end of the old PCC patch at the left end of the seat and at Bearing #2.
The west face of Pier #39 has large PCC patches at each end and 4 sq. ft. delaminated areas on each side of the right drain extension. The backwall has large spalled and delaminated

areas below the joint armor above Beams #1, #6, #7, and #8

There is general moderate to severe rust with some severe section loss on most steel encasements of the cellular unit piles. The visible portions of the steel pile encasements below the deck joints have severe section loss. The concrete in a few piles in Bents #8, #10, #12, and #18 in the near cellular unit is exposed and these piles have spalls with exposed hoop and vertical rebars. In 2006 at Bent #10 the cover concrete, of the portions of Piles #1 and #2 above the ground, has delaminated from the pile core concrete. Most bent caps have several hairline to wide, mostly vertical cracks. Several bent caps also have some heavy leaching and one or more hollow areas and/or spalls with some exposed steel, especially bent Cap #14 in the near cellular unit and bent Cap #59 in the far cellular unit.

There are several large hollow areas in the caps and columns of Piers #23, #24, #27, #28, #29, #31, and #35. A few piers also have one or more, smaller hollow areas and/or spalls with some exposed steel and most piers have some hairline, mostly vertical and random/map cracks. Piers #21, #22, #24, #25, #26, #27, #28, and #29, have large spalled, scaled and/or hollow areas, some with partially exposed primary and secondary reinforcing bars, in the right end of their caps that extend into their bridge seats, but there is no loss of bearing area. These areas were slightly larger in 2006. Pier #23 has three areas of scaling, 1" to 1 1/2" deep in its seat, adjacent to the patching in the right end that was done in 2002. These areas now extend slightly into the face of the pier. Pier #35 has a large delaminated area in each face of the right-cantilevered end of the cap and an area of severe scaling in the seat at Bearing #8.

The bridge seats of Piers #20, #23, #27, #31, #35, and #39 have debris on them.

There is severe rust and section loss on most bearing devices on Piers #20, #23, #24, #25, #31, #35, and #39. There is severe pack rust between Rockers #1 and #8, and their masonry plates on most of the piers with rockers. Most other pier bearing devices have some light to moderate rust.

The rockers on the far abutment were reset in January of 2002, but the masonry plates were not moved. There is severe rust and section loss on the rocker keeper assemblies on the piers beneath the deck expansion joints, and some upper rocker pins and their cradles are severely corroded and out of round. Some rockers on Piers #20, #23, #31, #35, and #39 have shifted longitudinally up to 2 3/8" because their keeper assemblies are no longer effective at preventing longitudinal movement, but none of them has shifted farther in 2006. Rockers #3 and #7 on Pier #20, Rocker #6 on Pier #35 in Span #35, Rockers #2, #3, #4, #5, and #7 on Pier #35 in Span #36, and Rockers #2, #3, #4, #5, #6, and #7 on Pier #39 can move longitudinally without restraint. Loose, missing, cracked, or broken components were noted at some upper bearing device connections at Piers #20, #23, #25, #27, #28, #30, #31, #32, #35, and #39. Masonry Plate #1 on Pier #32 has no effective anchor bolts and Fixed Shoe #3 on Pier #33 is missing one anchor bolt nut.

All but one of the interior rockers on Pier #20 is tipped to contraction at 70°F. At temperatures ranging from 67° to 85° F. there is a considerable variation in the pier rocker settings. A few rockers on Piers #24, #26, and #35, and several rockers on Piers #28, #29, #32, and #37 are tipped to contraction. All of the rockers on Pier #23 in Span #24 are tipped to contraction. Several rockers are tipped sharply to expansion on Piers #23, #31, and #35.

Superstructure - Spans #21 through #39 are continuous steel beam spans. This type of superstructure is vulnerable to fatigue cracking in the vicinity of the welded cover plates, welded blast plates, tack welded splice fill plates, and the welded conduit brackets on the bottom flanges of the beams in Span #39. Plates have been welded to the top flange of the exterior beams at the bearing stiffeners and intermediate connection plates The lateral braces for the light supports on

the left side are welded to the lower flange of the beams.

No fatigue cracks have been detected in the beams during past inspections of this bridge. A fatigue crack inspection of all of the fatigue vulnerable details listed above was made as part of this inspection, and no fatigue cracks were found.

Two cracked welds have been found, one at the end of a **blast plate** on Beam #8 in Span #33 and one in a tack weld on Beam #8 close to the far end of Span #39 where a **conduit bracket** is welded to the bottom flange. These cracks were previously reported and have been checked with the ultra-sonic testing device. The cracks did not extend into the bottom flanges of the beams. The welded blast plates and conduit brackets will be inspected for cracks at two year intervals. All other fatigue vulnerable locations will be inspected for cracks at six year intervals.

The bridge was last painted in 1977 with the zinc silicate paint system, which involved blast cleaning to bare steel. Paint scrape samples were obtained from the pedestrian stairway for the stairway removal/pin repair project let on 11-06-01, and the total lead was less than 50 ppm, and total chromium was 1025 ppm.

Some spot painting was done at Piers #20, #23, #27, #31, #35, and #39 in 1986. Loren J. Allison started contract painting of the bridge in 1992 but the painting contract was canceled by the Department of Transportation on May 29, 1992, due to environmental issues. Portions of some beams in Spans #37, #38, and #39 have primer but no topcoat.

There are many large areas of moderate to severe rust on the beams and scattered areas of peeling topcoat. The severe rust is mainly on the lower half of the beams. The diaphragms beneath the joints have some light to severe rust, and most of the intermediate diaphragms have some light rust.

There are some small areas of moderate to severe rust on the deck channels with larger areas at the stairway platforms The curb and sidewalk channels and the handrail support brackets have many large areas of light to severe rust. There is loss of cross sectional area on the top of both of these channels and on a few sidewalk support brackets.

Beam #8 has extensive moderate to severe rust on its exterior face in all spans. There are small areas of measured section loss on Beam #8 in several spans and some unmeasured section loss on most beams at the joints over Piers #20, #23, #31, #35, and #39. No additional areas of section loss were found on the beams in 2006.

A 2" wide x 1 1/2" high hole has rusted through a diaphragm connection plate on Beam #7, close to Pier #31 in Span #31. Holes have rusted through the lower web of the sidewalk support brackets over Pier #31 in Span #32, and Pier #35 in Span #36. No new loss was noted at these areas in 2006.

No change was noted in 2006 at the previously reported collision damage to Beam #8 in Span #22 and all of the gouges have been faired out. The handrail bracket connection plate at Diaphragm #3 on Beam #8 is deformed below the bracket and it has a 2 1/4" vertical tear at the bottom along the weld connecting it to the web. No crack was visible in Beam #8 in 2006. The far splice in Beam #4 of Span #22 has two loose splice bolts.

The light fixtures under the superstructure in Spans #29 and #32 are broken and the lighting conduit in Span #29 has large areas of severe rust.

The deck drains are extended; they empty into the city storm sewer. Both drain collectors at

Piers #20, 23, & 31, the left drain collector at Pier #35 and the right drain collector at Piers #27 are plugged. Most of the neoprene drain troughs have been cleaned; however, there is some accumulation of debris in the trough at Pier #20. The steel drain chute in Bay #7 at Pier #20 has a hole rusted through it and the left trough is missing one bolt. The drain chute in Bay #1 at Pier #31 has a large hole rusted through it. As reported in 2002, the left drainpipe at Pier #35 has a 9" high X 4" wide hole in it below the lower clean out.

Roadway - The deck is PC concrete overlaid with dense low-slump concrete in 1972. Extensive epoxy injection has been done in the eastbound lanes of most spans. The wearing surface was grooved transversely in 1990. There is a sidewalk on the left side of the roadway and there is a steel rub rail between it and the roadway. The far end of the bridge was widened on the right side from Bent #50 to Bent #64 in 1996. PCC patching and epoxy injection of the overlay was completed in the summer of 2004 by the District #4 Bridge Crew.

The overlay has scattered hairline transverse cracks and many hairline to wide longitudinal and random cracks, especially in the eastbound lanes over the cellular units. It has many large delaminated areas, several large PCC patches, and several small shallow spalls along the expansion joint armor and drain grates. There are new 1 sq. ft. to 5 sq. ft. areas of spalling or broken overlay in spans 3,8,9,10,11,13,14,17,34,37,38,39,41,52, and 55. The right curb has many hairline to narrow cracks, some with rust stain, extensive spalling in the fascia radiating from the rub rail posts, and some spalling in the top at the electrical junction boxes.

The effective widths of the deck expansion joints, at an ambient temperature of 65° F., are as follows:

Open joint over Pier #20, 3/16 inch*
Steel fingers over Pier #23, 1 3/4 inches
Steel fingers over Pier #31, 2 3/8 inches
Steel fingers over Pier #35, 1 1/2 inch
Open joint over Pier #39, 3/8 inch*

*However, the deck was tight against the backwalls at 80°F. The fingers in the far side of the expansion joints at Piers #23 and #31 are 1/2" to 3/4" higher than the fingers on the near side of both joints. The top of the overlay in Spans #21 and #39 is about 5/8" to 7/8" lower than the top of the overlay in Spans #20 and #40. The fingers on the near side of the expansion joint at Pier #35 are 1/2" higher than the fingers on the far side of the joint. Two of the sixty-four bolts that connect the expansion joint over Pier #31 to the beams are broken at Beams #2 and #3. Eight bolts that connect the expansion plate over Pier #35 to Beams #2, #3, #4, and #8 are missing nuts; the bolts appear to be too short. At Piers #20, #23 and #31 the expansion joint anchors are exposed in the sidewalk. Several of the anchors for the joint armor at Piers #20 and #39 are exposed in the ends of the bottom of the deck.

The bottom of the slab in the cellular units has many hairline, mostly longitudinal and map/random cracks with some heavy leaching, stalactites, several hollow areas, and several spalls with exposed steel. The bottom of the deck in Spans #21 to #39 has several hairline transverse and longitudinal cracks with a little leaching in many spans, and a few small spalls or honeycomb areas with exposed rebar. There are large areas of map cracking with efflorescence and/or some rust stain in Span 23, bay 4 at Pier #23, Span #25 at Beams #5 and #6, in Span #28 at Beam #5, in Span 29, bay 7 at Pier 29, in Span #30 along most of Beam #8, in Span #32 along Beam #8, in Span #33 in Bay #2, #3, and #4, in Span #34 in Bay #3 and #4, in Span #35 along Beam #8, in Span #36 in most of Bay #2 and #3 and along Pier #35, and in Span 37 in bay 6. There are delaminted or spalled areas in the overlay above some of these map cracked areas in the bottom.

Both steel handrails and the steel rub rail have some peeling topcoat, general areas of light to moderate rust, and areas of severe rust, mostly at the connections. There is minor collision damage to the right handrail in Spans #1, #21, #23, and #26. A few of the handrail posts and rails have holes rusted through them, as does the steel rub rail on the sidewalk. A few of the bolts that anchor the handrail and rub rail posts to the sidewalk and curb are broken. When a light pole was installed on the right curb of the near cellular unit at Pier #6, the handrail was modified. Four handrail posts are not anchored properly to the right curb in this area.

The top of the sidewalk has many hairline, mostly transverse cracks, several large scaled /spalled areas with exposed rebars, a couple large hollow areas, and a small hole through it at Bent #49 of the far cellular unit. The top of the sidewalk has been patched in Spans #33 and the far cellular unit. The bottom of the sidewalk has many hairline transverse cracks with some leaching, stalactites, several hollow areas, and spalls with some exposed rebar. Most of the exposed rebar have severe section loss. The loose concrete on the bottom of the sidewalk over the city streets and railroads has been removed.

In 2002 the three pedestrian stairways were removed.

The light poles on the bridge have been replaced. A 3 1/8" wide X 1" high hole has rusted through the light pole support (standard) bracket web at the right end of Pier #21; also, there is severe section loss on the web of the bracket at the left end of Pier #23. No new loss was found in 2006.

Approaches - Both approaches are paved with PC concrete and the near approach has been overlaid with asphaltic concrete.

The AC overlay on the near approach is broken over a polyurethane joint along the near end of the bridge, and in the EBL the AC overlay is about 1/2" higher than the deck overlay. The riding surface of the far approach is satisfactory.

The minimum widths of the pavement pressure relief joints are:

Near Approach - none visible
Far Approach - 1 3/4 inches, 60 ft. from the bridge

The metal plate on top of the right drain intake at the west end of the near retaining wall is broken. The drain basins on the right side at the near abutment and the left side at the far abutment are close to being full of debris.

ANALYSIS

This bridge has been analyzed and found to be adequate for two lane legal loads. The ratings are:

Operating Rating (@75 % of yield) = HS 21.7
Inventory Rating (@ 55% of yield) = HS 13.4

RECOMMENDATION

The bridge has been placed on the Special List because of the condition of the cellular end spans. The Office of Bridges & Structures will inspect it at least annually. Local surveillance of the bottom of the deck over traffic areas is recommended. Loose concrete should be removed as necessary over areas accessible to traffic or railroad.

This bridge is in poor condition. Severe deterioration was reported. Replacement is needed. If

replacement remains programmed, maintenance and/or repair items marked with an * need not be performed.

Corrective Recommendations

141. Some spalling and delamination of the Portland Cement concrete deck overlay was reported. Portland Cement concrete deck patching and epoxy injection should be done.

171. The collision damage to the rail should be repaired.

*399. Pile #4 at bent #8 and the cap at bent #14 in the near cellular spans and the cap at bent #59 in the far cellular spans have severe deterioration. The exposed reinforcing should be cleaned and treated with corrosion inhibitor and the pile and bent caps should be PCC patched. Other substructure units should be PCC patched as needed.

503. A pavement pressure relief joint is needed in the near approach.

599. The light pole near pier #6 on the right side interrupts the handrail at this location. Four handrail posts are not anchored to the curb at this location. Anchorage should be provided.

Preventive Recommendations

199. Drain extensions at Piers #20 and #23, and the right drain collector at Piers #27 and #31 should be cleaned out.

If you would like to discuss this Bridge Condition Report, please contact me.

All inspection documentation may be viewed through the Electronic Records Management System (ERMS).

SDN:mt

ABUTMENT (FAR)

7G **Over - All** ____ Trestle Pile

UF **Foundation** ____ Steel Shell Bearing Pile

Piles - Rust Not visible

Piles - Section Loss

NB **Backing Plank (Steel) (Wood)** ____ None

Leaking Approach Fill

7D **Cap And Bridge Seat (Concrete) (Steel)** ____ Concrete

Cap - (Map Cracking)(Rust)

Cap - (Other Cracks)(Section Loss) a few hairline vertical and longitudinal cracks

Cap - Spalls

Cap - Loss of Bearing

Hollow Areas

Bridge Seat - Dirt and Debris

NB **Bearing Devices** ____ None

Rust

Setting

NB **Backwall** ____ None

Top Surface

Cracked or Broken

Leaking Water or Fill

Hollow Areas

UA **End Deck Joint** ____ Unknown

Condition

NB **Wings** ____ None

Cracked or Broken

Differential Movement

Hollow Areas

COMMENTS

Widened on the right side in1996
The concrete sidewalls extend from Pier 39 to the far abutment There are large spalled and/or delaminated areas in the left sidewall at piers 47,51,53, &55 and in the right sidewall at Piers 43, 45, 47,49 & 51. There is a little more spalled/scaled & hollow in 2006 at these locations. There are large areas of hairline crazing in the left wall and in the west section of the right wall.

CODE SHEET NO. 3D **BRIDGE NO.** 7803.2S006

Completed On 6 /28/2006 **By** P. Gettler

CODE SHEET NO. 4A BRIDGE NO. 7803.2S006

MONOLITHIC CONCRETE PIER NO . 20

4D **Over - All** ____ Solid Concrete

UA **Foundation** ____ Unknown

5D **Face / Columns (Include Cap Area)** ____ Concrete

Vertical Cracks	a few hairline
Map Cracks	crazing at left end of far face
Other Cracks	hairline random
Leaching	
Spalling/Scaling/Hollow	A small spall below the seat at the left end and 3 areas of unsound concrete were reported in 2002. There are large PCC patches at each end In 2004 The scaled area in the seat at beam 2 had spread into the far face. Minor change 2006.

NB **Web / Struts** ____ None

Cracks	
Spalls	
Hollow Areas	

5D **Bridge Seat** ____ Concrete

Spalls/Scaling/Hollow Areas	small areas close to bearings 1 and 2 were reported in 2002. There are large PCC patches at bearings 1,2 and 8 The delaminated area on the near side of beam 2 is now scaled severely. Minor change 2006
Dirt and Debris	Some debris on seat from open joint above it
Loss of Bearing	none

4F **Bearing Devices** ____ Rockers

Rust	There is pack rust between the rockers and their masonry plates, and between the rocker pins and their cradles. Some of the rocker pins and their cradles appear to be out of round and the tops of the masonry plates are pitted.
Setting	The keeper assemblies have severe section loss, and rockers 3 (new 2004) & 7are no longer restrained from moving longitudinally on either side. The other rockers are no longer restrained from longitudinal movement on one side (new in 2004). Rockers 2,3,4,5, & 7 are tipped to contraction at 70 ° F The interior rockers are off center on their masonry plates to the west from 1/4" to 1 1/4" and the exterior rockers are off center slightly to the east. 10 of the 16 cap scews and their plates are gone The rocker pin on the top of rocker 8 has shifted 3/8" to the left

COMMENTS

This substructure element was called the near abutment prior to the 2004 inspection.
The concrete side walls that extend from the near end to Pier 20 have many hairline cracks. There are large delaminated shotcrete patches and large spalls, with a few rebars exposed, at the right side wall joints. There are large areas of severe scaling or spalling with exposed rebars in the right curb fascia between the near end and pier 1, and between piers 13 and 14 that have developed in 2004. Also there a couple large delaminated areas in the right curb fascia. There is a little more hollow & scaling in 2006.

CODE SHEET NO. 4A **BRIDGE NO.** 7803.2S006

Completed On 6 /28/2006 **By** P Gettler

CODE SHEET NO. 4A BRIDGE NO. 7803.2S006

MONOLITHIC CONCRETE PIER NO . 21

6G **Over - All** ____ Open 3 Column Concrete

UA **Foundation** ____ Unknown

6D **Face / Columns (Include Cap Area)** ____ Concrete

Vertical Cracks	a few hairline
Map Cracks	crazing at right end of cap
Other Cracks	one new 1/8" wide horizontal crack in the right end n 2006
Leaching	
Spalling/Scaling/Hollow	Rt. End of cap is spalled and has been PCC patched in the past. In 2004 the deterioration of the right end of the cap had enlarged. -- minor change in 2006

NB **Web / Struts** ____ None

Cracks	
Spalls	
Hollow Areas	

6D **Bridge Seat** ____ Concrete

Spalls/Scaling/Hollow Areas	spall at Rt end of cap in 2002. 2 SF of spalling and delamination in right end in 2004
Dirt and Debris	
Loss of Bearing	No

7D **Bearing Devices** ____ Fixed

Rust	severe rust on bearings 1 and 8, surface rust on 2 through 7
Setting	

COMMENTS

This substructure element was pier 1 prior to the 2004 inspection

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CODE SHEET NO. 4A BRIDGE NO. 7803.2S006

MONOLITHIC CONCRETE PIER NO . 22

6G **Over - All** ____ Open 3 Column Concrete

UA **Foundation** ____ Unknown

6D **Face / Columns (Include Cap Area)** ____ Concrete

Vertical Cracks	A few hairlline
Map Cracks	crazing in Rt cantilever
Other Cracks	hairline random in left cantilever & one new 1/8" wide horizontal crack in the right end
Leaching	
Spalling/Scaling/Hollow	1 sq ft spall and 1 sq ft unsound area in Rt cantilever reported in 2002. Rt end of cap has been patched with PCC in the past. New delaminated areas in RT end in 2004. one new spall in the left column in 2006.

NB **Web / Struts** ____ None

Cracks

Spalls

Hollow Areas

6D **Bridge Seat** ____ Concrete

Spalls/Scaling/Hollow Areas	End of seat from Bearing 8 to right end is unsound in 2004. 1 sq ft area of unsound concrete at Rt. End in 2002.
Dirt and Debris	
Loss of Bearing	No

6F **Bearing Devices** ____ Rockers

Rust	Pack rust between rockers 1 and 8, and their masonry plates Surface rust on rockers 2 through 7.
Setting	All tipped to expansion in 2006 at 70° F.

COMMENTS

This substructure element was pier 2 prior to the 2004 inspection.

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Completed On 6 /28/2006 **By** P. Gettler

CODE SHEET NO. 4A BRIDGE NO. 7803.2S006

MONOLITHIC CONCRETE PIER NO . 23

5G **Over - All** ____ Open 3 Column Concrete

UA **Foundation** ____ Unknown

5D **Face / Columns (Include Cap Area)** ____ Concrete

Vertical Cracks	a few hairline
Map Cracks	
Other Cracks	hairline random in left column
Leaching	
Spalling/Scaling/Hollow	7 large unsound areas were reported in 2002 - 5 new areas in 2004 -- 3 of the previously reported areas are larger in 2006.

NB **Web / Struts** ____ None

Cracks	
Spalls	
Hollow Areas	

5D **Bridge Seat** ____ Concrete

Spalls/Scaling/Hollow Areas	PCC patching in 2002 in 2006.	3 areas of scaling (3 sq ft) 1" to 1 1/2" deep
Dirt and Debris	small amount	
Loss of Bearing	No	

5F **Bearing Devices** ____ Wood

Rust	There is pack rust between the rockers and their masonry plates, and between the rocker pins and their cradles Some of the rocker pins and their cradles appear to be out of round and the tops of the masonry plates are pitted
Setting	All rockers in span 23 are tipped to expansion and all rockers in span 24 are tipped to contraction at 70 ° F. 10 of the 32 cap plates and their screws are gone and 4 cap plate welds are cracked. There is severe rust and section loss on the keeper assembly on bearing devices 2 thru 8 One keeper angle on bearings 7 & 8 in span 23, and bearing 6 in span 24 are no longer effective in restraining longitudinal movement. Rocker #5 in span 23 has shifted on its masonry plate 1 1/8" to the west in 2004. There has been little of no change in the longitudinal movement of the rockers since 2002.

COMMENTS

This substructure element was pier 3 prior to the 2004 inspection. This pier had extensive PCC patching in 2002

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CODE SHEET NO. 4A BRIDGE NO. 7803.2S006

MONOLITHIC CONCRETE PIER NO . 24

5G **Over - All** ____ Open 3 Column Concrete

UA **Foundation** _____ Unknown

5D **Face / Columns (Include Cap Area)** ____ Concrete

Vertical Cracks	a few hairline and two 1/16" wide open cracks
Map Cracks	crazing in cantilevered ends of the cap
Other Cracks	hairline random in columns
Leaching	
Spalling/Scaling/Hollow	In 2002, 7 large areas of unsound concrete were reported . This pier has been extensively patched with PCC. One new area of unsound concrete was found in the right end of the cap in 2004. Minor change 2006.

NB **Web / Struts** _____ None

Cracks	
Spalls	
Hollow Areas	

6D **Bridge Seat** ____ Concrete

Spalls/Scaling/Hollow Areas	one area of unsound concrete at the Rt end and a 8" Dia spall 1" deep close to bearing 7 with an exposed rebar. No change 2006.
Dirt and Debris	
Loss of Bearing	none

6F **Bearing Devices** ____ Rockers

Rust	There is pack rust between the rockers and their masonry plates.
Setting	Rockers 2 & 3 are tipped slightly to contraction at 75 ° F in 2006 and at 91° F in 2002. The rest are to expansion.

COMMENTS

This substructure element was pier 4 prior to the 2004 inspection "SHOTCRETE" repairs in all columns and PCC patching in the cap. In the 1980's the city of Council Bluffs stored sand and salt in span 4.

CODE SHEET NO. 4A **BRIDGE NO.** 7803 2S006

Completed On 6 /28/2006 **By** P. Gettler

CODE SHEET NO. 4A BRIDGE NO. 7803.2S006

MONOLITHIC CONCRETE PIER NO . 25

5G **Over - All** ____ Open 3 Column Concrete

UA **Foundation** _____ Unknown

5D **Face / Columns (Include Cap Area)** _____ Concrete

Vertical Cracks	a few hairline
Map Cracks	crazing in RT cantilevered end of cap
Other Cracks	
Leaching	
Spalling/Scaling/Hollow	4 unsound areas reported in 2002 two large PCC patches in cap and 3 areas in the columns - Large new areas of unsound concrete and spalling in right end of cap. One new area of unsound concrete in top of right column in 2004. A little more unsound concrete in the right end of the cap in 2006.

5D **Web / Struts** ____ Concrete

Cracks	a few hairline
Spalls	2 small areas reported in 2002
Hollow Areas	Extensive areas of unsound concrete and PCC patching in both faces in 2002 - No new areas in 2006

5D **Bridge Seat** _____ Concrete

Spalls/Scaling/Hollow Areas	2002 PCC patching at BRG 2 and Rt end - 2004 patching is unsound and there is severe scaling in right end with an exposed hoop bar.
Dirt and Debris	
Loss of Bearing	none

6F **Bearing Devices** ____ Rockers

Rust	Pack rust between rockers and their masonry plates.
Setting	Rocker 7 - Lt cap bolt protrudes from the cap plate. All rockers are tipped to expansion at 70° F.

COMMENTS

This substructure element was pier 5 prior to 2004 inspection. In the 1980's the city of Council Bluffs stored sand and salt against pier 4.

CODE SHEET NO. 4A **BRIDGE NO.** 7803.2S006

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CODE SHEET NO. 4A BRIDGE NO. 7803.2S006

MONOLITHIC CONCRETE PIER NO. 26

6G **Over - All** ____ Open 3 Column Concrete

UA **Foundation** ____ Unknown

6D **Face / Columns (Include Cap Area)** ____ Concrete

Vertical Cracks	
Map Cracks	
Other Cracks	
Leaching	
Spalling/Scaling/Hollow	In 2002 a large spall with an exposed rebar was reported in the Rt cantilvered end. In 2004 the deterioration at the right end of the cap was larger. There are a few small chips in the columns. -- minor change in 2006.

NB **Web / Struts** ____ None

Cracks	
Spalls	
Hollow Areas	

6D **Bridge Seat** ____ Concrete

Spalls/Scaling/Hollow Areas	Large spall in Rt end - the ends of 5 primary longitudinal rebars and one hoop bar are exposed in the spall in 2004 - minor change in 2006
Dirt and Debris	
Loss of Bearing	

7F **Bearing Devices** ____ Rockers

Rust	Pack rust between rockers 1,5 and 8, and their masonry plates. Surface rust on other rockers.
Setting	Rocker 8 is tipped slightly to contraction at 75° F in 2006 and at 91 ° F in 2002. -- The rest are to expansion.

COMMENTS

This substructure element was pier 6 prior to the 2004 inspection.

CODE SHEET NO. 4A **BRIDGE NO.** 7803.2S006

Completed On 6 /28/2006 **By** P. Gettler

CODE SHEET NO. 4A BRIDGE NO. 7803.2S006

MONOLITHIC CONCRETE PIER NO . 27

6G **Over - All** ____ Open 3 Column Concrete

UA **Foundation** ____ Unknown

6D **Face / Columns (Include Cap Area)** ____ Concrete

Vertical Cracks	a few hairline
Map Cracks	
Other Cracks	
Leaching	
Spalling/Scaling/Hollow	In 2002 large areas of unsound concrete were reported in the tops of the columns and small scrapes were noted in the Rt column. In 2004 the PCC patch in right end of cap was unsound and spalled. 1 primary longitudinal rebar and one hoop bar were partially exposed in 2004. minor change in 2006.

NB **Web / Struts** ____ None

Cracks	
Spalls	
Hollow Areas	

6D **Bridge Seat** ____ Concrete

Spalls/Scaling/Hollow Areas	In 2002 a small spall and a large PCC patch were reported in the Rt end - In 2004 the patch was unsound and spalled area is larger Minor change in 2006
Dirt and Debris	
Loss of Bearing	none

7D **Bearing Devices** ____ Fixed

Rust	Surface rust on all devices
Setting	Rocker 8 - Lt. Cap screw is gone.

COMMENTS

This substructure element was pier 7prior to the 2004 inspection.

CODE SHEET NO. 4A **BRIDGE NO.** 7803.2S006

Completed On 6 /29/2006 **By** P. Gettler

CODE SHEET NO. 4A BRIDGE NO. 7803.2S006

MONOLITHIC CONCRETE PIER NO . 28

6G **Over - All** ____ Open 3 Column Concrete

UA **Foundation** ____ Unknown

6D **Face / Columns (Include Cap Area)** ____ Concrete

Vertical Cracks	a few hairline - one 1/8" wide crack in right column
Map Cracks	
Other Cracks	crazing in Rt cantilevered end of the cap
Leaching	
Spalling/Scaling/Hollow	In 2002 areas of unsound concrete were reported in the Rt cantilevered end of the cap and the top of the Rt column. PCC patching in Rt end of cap. In 2004 delaminated area in right end of cap is larger. Minor change in 2006.

NB **Web / Struts** ____ None

Cracks	
Spalls	
Hollow Areas	

7D **Bridge Seat** ____ Concrete

Spalls/Scaling/Hollow Areas	PCC patching in Rt end
Dirt and Debris	
Loss of Bearing	none

6F **Bearing Devices** ____ Rockers

Rust	Pack rust between rockers 1 and 8, and their masonry plates Surface rust on rockers 2 through 7.
Setting	Rockers 1 thru 5 are tipped to contraction at 72 degrees F. -- The other three are to expansion

COMMENTS

This substructure element was pier 8 prior to the 2004 inspection.

CODE SHEET NO. 4A **BRIDGE NO.** 7803.2S006

Completed On 6 /28/2006 **By** P. Gettler

CODE SHEET NO. 4A BRIDGE NO. 7803.2S006

MONOLITHIC CONCRETE PIER NO . 29

5G **Over - All** ____ Open 3 Column Concrete

UA **Foundation** ____ Unknown

5D **Face / Columns (Include Cap Area)** ____ Concrete

Vertical Cracks

Map Cracks

Other Cracks

Leaching

Spalling/Scaling/Hollow In 2002 ,concrete in Rt cantilevered end was unsound , spalled and scaled with exposed rebar. In 2006 area is larger.

NB **Web / Struts** ____ None

Cracks

Spalls

Hollow Areas

5D **Bridge Seat** ____ Concrete

Spalls/Scaling/Hollow Areas Rt end unsound and scaling in 2002. In 2004 there is more unsound concrete at the right end and 2 hoop bars and a few primary horizontal rebars are partially exposed. Minor change in 2006.

Dirt and Debris

Loss of Bearing

6F **Bearing Devices** ____ Rockers

Rust Pack rust between rockers 1 and 8, and their masonry plates. Surface rust on rockers 2 through 7

Setting Rockers 1,5,7,& 8 are tipped to contraction at 72° F. -- Rockers 2 & 4 are vertical, the rest are to expansion.

COMMENTS

This substructure element was pier 9 prior to the 2004 inspection

CODE SHEET NO. 4A **BRIDGE NO.** 7803.2S006

Completed On 6 /28/2006 **By** P. Gettler

CODE SHEET NO. 4A BRIDGE NO. 7803.2S006

MONOLITHIC CONCRETE PIER NO . 30

7G **Over - All** ____ Open 3 Column Concrete

UA **Foundation** ____ Unknown

8D **Face / Columns (Include Cap Area)** ____ Concrete

Vertical Cracks	a few hairline
Map Cracks	
Other Cracks	
Leaching	
Spalling/Scaling/Hollow	small chip in Rt column

NB **Web / Struts** ____ None

Cracks	
Spalls	
Hollow Areas	

9D **Bridge Seat** ____ Concrete

Spalls/Scaling/Hollow Areas	
Dirt and Debris	
Loss of Bearing	

6F **Bearing Devices** ____ Rockers

Rust	Pack rust between rockers 1 and 8, and their masonry plates. Surface rust on all rockers
Setting	Rocker 3 - Rt cap screw is loose. All rockers are tipped to expansion at 75° F.

COMMENTS

This substructure element was pier 10 prior to the 2004 inspection.

CODE SHEET NO. 4A **BRIDGE NO.** 7803.2S006

Completed On 6 /28/2006 **By** P. Gettler

CODE SHEET NO. 4A BRIDGE NO. 7803.2S006

MONOLITHIC CONCRETE PIER NO . 31

5G **Over - All** ____ Open 3 Column Concrete

UA **Foundation** ____ Unknown

5D **Face / Columns (Include Cap Area)** ____ Concrete

Vertical Cracks	a few hairline
Map Cracks	
Other Cracks	
Leaching	
Spalling/Scaling/Hollow	In 2002, 5 areas of unsound concrete were noted in the cap and Rt column. 2 new areas in 2004 -- There are a few new scaled areas in the top of the cap in 2006.

NB **Web / Struts** ____ None

Cracks	
Spalls	
Hollow Areas	

5D **Bridge Seat** ____ Concrete

Spalls/Scaling/Hollow Areas	There are low spots between most masonry plates that are 1/8" to 1 1/8" deep. Seat is unsound on right side of bearing device 8 in 2004. In 2006 there are a couple of new scaled areas at the right end.
Dirt and Debris	some debris accumulating between masonry plates
Loss of Bearing	

5F **Bearing Devices** ____ Wood

Rust	There is pack rust between the rockers and their masonry plates, and between the rocker pins and their cradles. Some of the rocker pins and cradles appear to be out of round and the tops of the masonry plates are pitted. There is severe rust and section loss on the longitudinal restraint (keeper) assemblies at all rockers In 2006 the vertical leg of the left keeper angle on rocker #1 is broken.
Setting	All rockers in span 31 & 32 are tipped to expansion at 85 ° F All rockers in span 31 are tipped sharply to expansion. Rockers 3,4, & 5 in span 31 appear to be tipped to their expansion limit in 2006. In 2004 at rocker 4 in span 31 the left keeper pin was no longer effective and at Rocker 1 in spans 31 & 32 the top of the left keeper angle is broken. The broken angle in span 31 is new in 2006. None of the rockers have shifted longitudinally a significant amount.

COMMENTS

This substructure element was pier 11 prior to the 2004 inspection. In 2002 this pier was extensively patched with PCC.

CODE SHEET NO. 4A **BRIDGE NO.** 7803.2S006

Completed On 6 /28/2006 **By** P. Gettler

CODE SHEET NO. 4A **BRIDGE NO.** 7803.2S006

MONOLITHIC CONCRETE PIER NO . 32

8G **Over - All** ____ Open 3 Column Concrete

UA **Foundation** ____ Unknown

9D **Face / Columns (Include Cap Area)** ____ Concrete

Vertical Cracks

Map Cracks

Other Cracks

Leaching

Spalling/Scaling/Hollow

8D **Web / Struts** ____ Concrete

Cracks a few tight hairline

Spalls

Hollow Areas

8D **Bridge Seat** ____ Concrete

Spalls/Scaling/Hollow Areas

Dirt and Debris

Loss of Bearing

7F **Bearing Devices** ____ Rockers

Rust surface rust on bottom of all rockers

Setting Rocker 1 - 3 anchor bolts are missing and one is broken
Rocker 3 - Lt cap screw is loose
Rockers 1 & 2 are tipped slightly to contraction at 85 ° F

COMMENTS

This substructure element was pier 12 prior to the 2004 inspection.

CODE SHEET NO. 4A **BRIDGE NO.** 7803.2S006

Completed On 6 /28/2006 **By** P. Gettler

CODE SHEET NO. 4A BRIDGE NO. 7803.2S006

MONOLITHIC CONCRETE PIER NO . 33

8G **Over - All** ____ Open 3 Column Concrete

UA **Foundation** ____ Unknown

9D **Face / Columns (Include Cap Area)** ____ Concrete

Vertical Cracks

Map Cracks

Other Cracks

Leaching

Spalling/Scaling/Hollow

9D **Web / Struts** ____ Concrete

Cracks	one tight hairline
Spalls	one small chp
Hollow Areas	

8D **Bridge Seat** ____ Concrete

Spalls/Scaling/Hollow Areas

Dirt and Debris

Loss of Bearing

8D **Bearing Devices** ____ Fixed

Rust	surface rust on all devices
Setting	Fixed shoe 3 is missing one anchor bolt nut

COMMENTS

This substructure element was pier 13 prior to the 2004 inspection.

Completed On 6 /28/2006 **By** P Gettler

CODE SHEET NO. 4A **BRIDGE NO.** 7803.2S006

MONOLITHIC CONCRETE PIER NO . 34

5G **Over - All** ____ Open 3 Column Concrete

UA **Foundation** ____ Unknown

5D **Face / Columns (Include Cap Area)** ____ Concrete

Vertical Cracks	one 1/16 wide crack in Right column
Map Cracks	
Other Cracks	one hairline horizontal
Leaching	
Spalling/Scaling/Hollow	New spalling and delaminated areas in right end of cap and top of right column in 2004. One hoop bar is partially exposed.

NB **Web / Struts** ____ None

Cracks	
Spalls	
Hollow Areas	

8D **Bridge Seat** ____ Concrete

Spalls/Scaling/Hollow Areas	
Dirt and Debris	
Loss of Bearing	none

7F **Bearing Devices** ____ Rockers

Rust	Pack rust between rockers 1 and 8, and their masonry plates. Surface rust on all rockers
Setting	All rockers are tipped to expansion at 75 ° F.

COMMENTS

This substructure element was pier 14 prior to the 2004 inspection. Stairway removed in 2002

CODE SHEET NO. 4A **BRIDGE NO.** 7803.2S006

Completed On 6 /28/2006 **By** P. Gettler

CODE SHEET NO. 4A BRIDGE NO. 7803.2S006

MONOLITHIC CONCRETE PIER NO . 35

4G **Over - All** ____ Open 3 Column Concrete

UA **Foundation** ____ Unknown

5D **Face / Columns (Include Cap Area)** ____ Concrete

Vertical Cracks	3 hairline to narrow that are bleeding rust.
Map Cracks	
Other Cracks	One hairline in cap that is bleeding rust, hairline random in Rt column
Leaching	
Spalling/Scaling/Hollow	3 large areas of unsound concrete in the cap close to the drains. Three new or larger unsound area were found in 2004 and one new area of severe scaling at bearing 8. In 2006 there are two new scaled areas in the top of the cap & one new/larger unsound area.

NB **Web / Struts** ____ None

Cracks	
Spalls	
Hollow Areas	

6D **Bridge Seat** ____ Concrete

Spalls/Scaling/Hollow Areas	large PCC patches at Rt end. - New area of severe scaling at bearing 8 in 2004
Dirt and Debris	some debris between masonry plates
Loss of Bearing	none

4F **Bearing Devices** ____ Rockers

Rust	There is pack rust between the rockers and their masonry plates, and between the rocker pins and their cradles. Some of the rocker pins appear to be out of round and the tops of the masonry plates are pitted. There is severe rust and section loss on the longitudinal restraint (keeper) assemblies at all rockers.
Setting	In Span #35 rockers 2 & 3 are tipped to contraction at 80° F. and rockers 7 & 8 are tipped to their expansion limits. The keeper assembly on rocker 6 in span 35 is ineffective and its longitudinal movement is unrestrained. In span 36 rockers 3,4, & 5 are tipped to contraction and rockers 7,8 &9 are tipped to there expansion limits at 80 ° F. The keeper assemblies on rocker 2 thru 7 in span 36 are no longer effective and rocker 3,4 ,& 5 have shifted west on their masonry plates from 1 " to 2" (rocker 5 overhangs its masonry plate about 1/2") In 2006 none of the rockers have shifted farther longitudinally on their masonry plates than they had in 2004. Several cap screw plates are missing or have cracked welds and several cap screws are missing

COMMENTS

This substructure element was pier 15 prior to the 2004 inspection. This pier was extensively patched with PCC in 2002.

CODE SHEET NO. 4A **BRIDGE NO.** 7803 2S006

Completed On 6 /28/2006 **By** P. Gettler

CODE SHEET NO. 4A BRIDGE NO. 7803.2S006

MONOLITHIC CONCRETE PIER NO . 36

6D **Over - All** ____ Solid Concrete

UA **Foundation** ____ Unknown

6D **Face / Columns (Include Cap Area)** ____ Concrete

Vertical Cracks	a few hairline
Map Cracks	
Other Cracks	a few random hairline
Leaching	
Spalling/Scaling/Hollow	There are small areas of unsound concrete around the PCC patch in the Rt cantilevered end of the cap in 2002. One new small area of scaling in 2004. Minor change in 2006.

NB **Web / Struts** ____ None

Cracks

Spalls

Hollow Areas

7D **Bridge Seat** ____ Concrete

Spalls/Scaling/Hollow Areas PCC patch at Rt end

Dirt and Debris

Loss of Bearing

7F **Bearing Devices** ____ Rockers

Rust	Pack rust between rockers 1 and 8, and their masonry plates. Surface rust on all rockers
Setting	All rockers are tipped to expansion at 85° F.

COMMENTS

This substructure element was pier 16 prior to the 2004 inspection.

CODE SHEET NO. 4A **BRIDGE NO.** 7803.2S006

Completed On 6 /28/2006 **By** P. Gettler

CODE SHEET NO. 4A BRIDGE NO. 7803.2S006

MONOLITHIC CONCRETE PIER NO . 37

6G **Over - All** ____ Open 3 Column Concrete

UA **Foundation** ____ Unknown

6D **Face / Columns (Include Cap Area)** ____ Concrete

Vertical Cracks	a few hairline
Map Cracks	
Other Cracks	hairline random in the columns
Leaching	
Spalling/Scaling/Hollow	small are of honey comb in Lt column - New area of unsound concrete in right column in 2004.

NB **Web / Struts** ____ None

Cracks

Spalls

Hollow Areas

9D **Bridge Seat** ____ Concrete

Spalls/Scaling/Hollow Areas

Dirt and Debris

Loss of Bearing

6F **Bearing Devices** ____ Rockers

Rust	Pack rust between rockers 1 and 8, and their masonry plates. Surface rust on all rockers
Setting	Rockers 1,2,4, & 5 are tipped to contraction at 85 ° F.

COMMENTS

This substructure element was pier 17prior to the 2004 inspection.

CODE SHEET NO. 4A **BRIDGE NO.** 7803.2S006

Completed On 6 /28/2006 **By** P Gettler

CODE SHEET NO. 4A BRIDGE NO. 7803.2S006

MONOLITHIC CONCRETE PIER NO . 38

6D **Over - All** ____ Solid Concrete

UA **Foundation** ____ Unknown

6D **Face / Columns (Include Cap Area)** ____ Concrete

Vertical Cracks	a few hairline to 1/16" wide cracks
Map Cracks	
Other Cracks	one hairline horizontal that is bleeding rust in the bottom of the Rt cantilevered end of the cap
Leaching	
Spalling/Scaling/Hollow	small chips in Rt cantilever - New spalled and unsound area in right end of cap in 2004. minor change in 2006.

NB **Web / Struts** ____ None

Cracks

Spalls

Hollow Areas

9D **Bridge Seat** ____ Concrete

Spalls/Scaling/Hollow Areas

Dirt and Debris

Loss of Bearing

8D **Bearing Devices** ____ Fixed

Rust	surface rust on all devices that are painted only with primer
Setting	

COMMENTS

This substructure element was pier 18prior to the 2004 inspection.

CODE SHEET NO. 4A **BRIDGE NO.** 7803.2S006

Completed On 6 /28/2006 **By** P. Gettler

CODE SHEET NO. 4A BRIDGE NO. 7803.2S006

MONOLITHIC CONCRETE PIER NO . 39

4D **Over - All** ____ Solid Concrete

UA **Foundation** ____ Unknown

5D **Face / Columns (Include Cap Area)** ____ Concrete

Vertical Cracks	a few hairline
Map Cracks	
Other Cracks	a few hairline horizontal and random hairline
Leaching	
Spalling/Scaling/Hollow	In 2002 4 large spalled areas up to 2" deep and two adjacent hollow areas were reported in the top portion, one had exposed rebars. One small new area of scaling at the top and 2 new delaminated areas in the lower portion close to the right drain in 2004.. minor change in 2006.

NB **Web / Struts** ____ None

Cracks	
Spalls	
Hollow Areas	

7D **Bridge Seat** ____ Concrete

Spalls/Scaling/Hollow Areas	PCC patch in Rt end
Dirt and Debris	Some debris on seat in 2006.
Loss of Bearing	none

4F **Bearing Devices** ____ Rockers

Rust	There is pack rust between the rockers and their masonry plates, and between the rocker pins and their cradles.. Some of the rocker pins appear to be out of round and the tops of the masonry plates are pitted There is severe rust and section loss on the longitudinal restraint (keeper) assemblies at all rockers
Setting	Rocker 6 is tipped sharply to contraction at 67 ° F and most of the other rockers are tipped slightly to expansion or vertical. The rockers were straightened in 2002 without moving the masonry plates The horizontal restraint (keeper) assemblies at rockers1, 2,3,4,5,6,and 7 are no longer effective due to section loss or damage. Rockers 4 and 6 are off center to the east on their masonry plates 1 1/8" and 2 3/8" respectively with rocker 6 overhanging its masonry plate 7/8".. There has been little change in these measurements since 2002. A few cap screw plates are gone or have cracked welds and 2 cap screws are gone.

COMMENTS

This substructure element was the far abutment prior to the 2004 inspection. PCC patching in 2002 "SHOTCRETE" patching in1987
The sidewalls of the far cellular unit have several hairline vertical, horizontal and map cracks. There are large spalled, scaled and delaminated areas at several joints in each wall Most of the shotcrete patching has failed. There are four large spalls in the backwall below the joint armor for the expansion joint. There are a few new spalled/scaled areas @ several joints in 2006.

CODE SHEET NO. 4A **BRIDGE NO.** 7803.2S006

Completed On 6 /28/2006 **By** P Gettler

CODE SHEET NO. 4B **BRIDGE NO.** 7803.2S006

PILE BENT PIER NO . 1

UH **Over - All** ____ Concrete Trestle Pile

UF **Foundation (Piles)** ____ Steel Shell Bearing Pile

Concrete - Vertical Cracks
Concrete - Map Cracks
Concrete - Other Cracks
Concrete - Spalling/Scaling/Hollow
Steel - Rust
Wood - Splits/Checks
Wood - Rotten or Hollow Areas

UD **Face (Include Cap Area)** ____ Concrete

Concrete - Vertical Cracks
Concrete - Map Cracks
Concrete - Other Cracks
Concrete - Spalling/Scaling/Hollow
Steel - Rust
Wood - Splits/Checks
Wood - Rotten or Hollow Areas

NB **Web / Struts** ____ None

X-Bracing

NB **Bridge Seat** ____ None

Spalls/Scaling/Hollow Areas
Dirt and Debris
Loss Of Bearing

NB **Bearing Devices** ____ None

Rust
Setting

COMMENTS

This pier is inaccessable.

Completed On 6 /28/2006 **By** P Gettler

CODE SHEET NO. 4B BRIDGE NO. 7803.2S006

PILE BENT PIER NO. 2

5H **Over - All** ____ Concrete Trestle Pile

5F **Foundation (Piles)** ____ Steel Shell Bearing Pile

Concrete - Vertical Cracks	
Concrete - Map Cracks	
Concrete - Other Cracks	
Concrete - Spalling/Scaling/Hollow	
Steel - Rust	Most of the steel encasements above ground have severe section loss
Wood - Splits/Checks	
Wood - Rotten or Hollow Areas	

6D **Face (Include Cap Area)** ____ Concrete

Concrete - Vertical Cracks	two hairline - One 1/8" wide over pile 2 in far face
Concrete - Map Cracks	
Concrete - Other Cracks	
Concrete - Spalling/Scaling/Hollow	spall in bottom of cap at pile 2
Steel - Rust	
Wood - Splits/Checks	
Wood - Rotten or Hollow Areas	

NB **Web / Struts** ____ None

X-Bracing

NB **Bridge Seat** ____ None

Spalls/Scaling/Hollow Areas

Dirt and Debris

Loss Of Bearing

NB **Bearing Devices** ____ None

Rust

Setting

COMMENTS

Near face of pier 2 is not accessable. There is a mastic deck joint over this pier.

CODE SHEET NO. 4B **BRIDGE NO.** 7803.2S006

Completed On 6 /28/2006 **By** P Gettler

CODE SHEET NO. 4B BRIDGE NO. 7803.2S006

PILE BENT PIER NO . 3

5H **Over - All** ____ Concrete Trestle Pile

6F **Foundation (Piles)** ____ Steel Shell Bearing Pile

Concrete - Vertical Cracks	Not visible
Concrete - Map Cracks	Not visible
Concrete - Other Cracks	Not visible
Concrete - Spalling/Scaling/Hollow	Not visible
Steel - Rust	General moderate to severe rust where visible
Wood - Splits/Checks	N/A
Wood - Rotten or Hollow Areas	N/A

5D **Face (Include Cap Area)** ____ Concrete

Concrete - Vertical Cracks	1/16" wide cracks over most piles
Concrete - Map Cracks	
Concrete - Other Cracks	
Concrete - Spalling/Scaling/Hollow	
Steel - Rust	N/A
Wood - Splits/Checks	N/A
Wood - Rotten or Hollow Areas	N/A

NB **Web / Struts** ____ None

X-Bracing

NB **Bridge Seat** ____ None

Spalls/Scaling/Hollow Areas

Dirt and Debris

Loss Of Bearing

NB **Bearing Devices** ____ None

Rust

Setting

COMMENTS

Completed On 6 /28/2006 **By** P Gettler

CODE SHEET NO. 4B BRIDGE NO. 7803.2S006

PILE BENT PIER NO . 4

5H **Over - All** ____ Concrete Trestle Pile

5F **Foundation (Piles)** ____ Steel Shell Bearing Pile

Concrete - Vertical Cracks	Not visible
Concrete - Map Cracks	Not visible
Concrete - Other Cracks	Not visible
Concrete - Spalling/Scaling/Hollow	Not visible
Steel - Rust	Most of the steel encasements above ground have severe section loss
Wood - Splits/Checks	N/A
Wood - Rotten or Hollow Areas	N/A

5D **Face (Include Cap Area)** ____ Concrete

Concrete - Vertical Cracks	Hairline cracks over most piles. Cracks 1/16" to 1/8" wide over piles 2 and 4, these cracks are widest at the bottom of the cap
Concrete - Map Cracks	
Concrete - Other Cracks	several hairline random
Concrete - Spalling/Scaling/Hollow	spall at pile 2 in bottom of cap
Steel - Rust	N/A
Wood - Splits/Checks	N/A
Wood - Rotten or Hollow Areas	N/A

NB **Web / Struts** ____ None

X-Bracing

NB **Bridge Seat** ____ None

Spalls/Scaling/Hollow Areas

Dirt and Debris

Loss Of Bearing

NB **Bearing Devices** ____ None

Rust

Setting

COMMENTS

There is a mastic deck joint over this pier

CODE SHEET NO. 4B **BRIDGE NO.** 7803.2S006

Completed On 6 /28/2006 **By** P. Gettler

CODE SHEET NO. 4B BRIDGE NO. 7803.2S006

PILE BENT PIER NO . 5

5H **Over - All** ____ Concrete Trestle Pile

6F **Foundation (Piles)** ____ Steel Shell Bearing Pile

Concrete - Vertical Cracks	Not visible
Concrete - Map Cracks	Not visible
Concrete - Other Cracks	Not visible
Concrete - Spalling/Scaling/Hollow	Not visible
Steel - Rust	General moderate to severe rust on the exposed portion of the piles
Wood - Splits/Checks	N/A
Wood - Rotten or Hollow Areas	N/A

5D **Face (Include Cap Area)** ____ Concrete

Concrete - Vertical Cracks	1/16" wide cracks over pile 2, cracks are open the widest at the bottom of the cap. Hairline cracks over most piles
Concrete - Map Cracks	
Concrete - Other Cracks	A few random hairline
Concrete - Spalling/Scaling/Hollow	
Steel - Rust	N/A
Wood - Splits/Checks	N/A
Wood - Rotten or Hollow Areas	N/A

NB **Web / Struts** ____ None

X-Bracing

NB **Bridge Seat** ____ None

Spalls/Scaling/Hollow Areas

Dirt and Debris

Loss Of Bearing

NB **Bearing Devices** ____ None

Rust

Setting

COMMENTS

CODE SHEET NO. 4B **BRIDGE NO.** 7803.2S006

Completed On 6 /28/2006 **By** P. Gettler

CODE SHEET NO. 4B BRIDGE NO. 7803.2S006

PILE BENT PIER NO . 6

5H **Over - All** ____ Concrete Trestle Pile

5F **Foundation (Piles)** ____ Steel Shell Bearing Pile

Concrete - Vertical Cracks	Not visible
Concrete - Map Cracks	Not visible
Concrete - Other Cracks	Not visible
Concrete - Spalling/Scaling/Hollow	Not visible
Steel - Rust	Most of the steel encasements above ground have severe section loss
Wood - Splits/Checks	N/A
Wood - Rotten or Hollow Areas	N/A

5D **Face (Include Cap Area)** ____ Concrete

Concrete - Vertical Cracks	Hairline cracks over most piles Cracks 1/16" to 1/8" wide over piles 2,3 and 4, these cracks are widest at the bottom of the cap
Concrete - Map Cracks	
Concrete - Other Cracks	hairline random cracks
Concrete - Spalling/Scaling/Hollow	The cap is spalled and has minor bearing area loss in the top at the sidewalk support beam and is spalled in the bottom at pile 5
Steel - Rust	N/A
Wood - Splits/Checks	N/A
Wood - Rotten or Hollow Areas	N/A

NB **Web / Struts** ____ None

X-Bracing

NB **Bridge Seat** ____ None

Spalls/Scaling/Hollow Areas

Dirt and Debris

Loss Of Bearing

NB **Bearing Devices** ____ None

Rust

Setting

COMMENTS

There is a mastic deck joint over this pier

CODE SHEET NO. 4B **BRIDGE NO.** 7803.2S006

Completed On 6 /28/2006 **By** P. Gettler

CODE SHEET NO. 4B BRIDGE NO. 7803.2S006

PILE BENT PIER NO. 7

5H **Over - All** ____ Concrete Trestle Pile

6F **Foundation (Piles)** ____ Steel Shell Bearing Pile

Concrete - Vertical Cracks	Not visible
Concrete - Map Cracks	Not visible
Concrete - Other Cracks	Not visible
Concrete - Spalling/Scaling/Hollow	Not visible
Steel - Rust	General moderate to severe rust where visible
Wood - Splits/Checks	N/A
Wood - Rotten or Hollow Areas	N/A

5D **Face (Include Cap Area)** ____ Concrete

Concrete - Vertical Cracks	Hairline cracks over most piles. Cracks 1/16" to 1/8" wide over pile 2 these cracks are widest at the bottom of the cap
Concrete - Map Cracks	
Concrete - Other Cracks	a few hairline random and diagonal
Concrete - Spalling/Scaling/Hollow	the bottom of the cap is spalled at pile 4
Steel - Rust	N/A
Wood - Splits/Checks	N/A
Wood - Rotten or Hollow Areas	N/A

NB **Web / Struts** ____ None

X-Bracing

NB **Bridge Seat** ____ None

Spalls/Scaling/Hollow Areas

Dirt and Debris

Loss Of Bearing

NB **Bearing Devices** ____ None

Rust

Setting

COMMENTS

CODE SHEET NO. 4B **BRIDGE NO.** 7803.2S006

Completed On 6 /28/2006 **By** P. Gettler

CODE SHEET NO. 4B BRIDGE NO. 7803.2S006

PILE BENT PIER NO. 8

4H **Over - All** ____ Concrete Trestle Pile

4F **Foundation (Piles)** ____ Steel Shell Bearing Pile

Concrete - Vertical Cracks	a few wide cracks are visible in the core of pile 4 in 2006
Concrete - Map Cracks	None
Concrete - Other Cracks	None
Concrete - Spalling/Scaling/Hollow	Exposed concrete in Pile 4 has a 3 sq ft spall below the cap, with 3 exposed vertical rebars, that is about 2" deep. This spall is slightly larger in 2006.
Steel - Rust	Most of the steel encasements above ground have severe section loss
Wood - Splits/Checks	N/A
Wood - Rotten or Hollow Areas	N/A

5D **Face (Include Cap Area)** ____ Concrete

Concrete - Vertical Cracks	Cracks 1/16" to 1/8" wide over all piles, these cracks are widest at the bottom of the cap
Concrete - Map Cracks	
Concrete - Other Cracks	random hairline
Concrete - Spalling/Scaling/Hollow	There are previously reported spalls with minor loss of bearing area in the top of the cap at the sidewalk support beam and between piles 2 and 3. There is a large previously reported area of unsound concrete over pile 4
Steel - Rust	N/A
Wood - Splits/Checks	N/A
Wood - Rotten or Hollow Areas	N/A

NB **Web / Struts** ____ None

X-Bracing

NB **Bridge Seat** ____ None

Spalls/Scaling/Hollow Areas

Dirt and Debris

Loss Of Bearing

NB **Bearing Devices** ____ None

Rust

Setting

COMMENTS

There is a mastic deck joint over this pier. There is heavy effloescence on the pier cap.

CODE SHEET NO. 4B **BRIDGE NO.** 7803.2S006

Completed On 6 /28/2006 **By** P. Gettler

CODE SHEET NO. 4B BRIDGE NO. 7803.2S006

PILE BENT PIER NO . 9

5H **Over - All** ____ Concrete Trestle Pile

6F **Foundation (Piles)** ____ Steel Shell Bearing Pile

Concrete - Vertical Cracks	Not visible
Concrete - Map Cracks	Not visible
Concrete - Other Cracks	Not visible
Concrete - Spalling/Scaling/Hollow	Not visible
Steel - Rust	General moderate to severe rust where visible
Wood - Splits/Checks	N/A
Wood - Rotten or Hollow Areas	N/A

5D **Face (Include Cap Area)** ____ Concrete

Concrete - Vertical Cracks	Hairline cracks over most piles. Cracks 1/16" to 1/8" wide over piles 1,2, and 4, these cracks are widest at the bottom of the cap
Concrete - Map Cracks	
Concrete - Other Cracks	hairline random
Concrete - Spalling/Scaling/Hollow	small unsound areas in bottom of cap at piles 4 and 5
Steel - Rust	N/A
Wood - Splits/Checks	N/A
Wood - Rotten or Hollow Areas	N/A

NB **Web / Struts** ____ None

X-Bracing

NB **Bridge Seat** ____ None

Spalls/Scaling/Hollow Areas

Dirt and Debris

Loss Of Bearing

NB **Bearing Devices** ____ None

Rust

Setting

COMMENTS

CODE SHEET NO. 4B **BRIDGE NO.** 7803.2S006

Completed On 6 /28/2006 **By** P Gettler

CODE SHEET NO. 4B BRIDGE NO. 7803.2S006

PILE BENT PIER NO . 10

4H **Over - All** ____ Concrete Trestle Pile

4F **Foundation (Piles)** ____ Steel Shell Bearing Pile

Concrete - Vertical Cracks	
Concrete - Map Cracks	
Concrete - Other Cracks	
Concrete - Spalling/Scaling/Hollow	spalls with exposed rebars in piles1, 2, 4 and 5, and the right pilaster. Spall in pile 1 is new in 2006. The exposed portions of the surface of piles 1 & 2 are unsound in 2006.
Steel - Rust	Most of the steel encasements above ground have severe section loss
Wood - Splits/Checks	N/A
Wood - Rotten or Hollow Areas	N/A

5D **Face (Include Cap Area)** ____ Concrete

Concrete - Vertical Cracks	Cracks 1/16" to 1/8" wide over all piles,these cracks are widest at the bottom of the cap
Concrete - Map Cracks	
Concrete - Other Cracks	several hairline random
Concrete - Spalling/Scaling/Hollow	
Steel - Rust	N/A
Wood - Splits/Checks	N/A
Wood - Rotten or Hollow Areas	N/A

NB **Web / Struts** ____ None

X-Bracing

NB **Bridge Seat** ____ None

Spalls/Scaling/Hollow Areas

Dirt and Debris

Loss Of Bearing

NB **Bearing Devices** ____ None

Rust

Setting

COMMENTS

There is a mastic deck joint over this pier There is heavy efflorescence on the cap

CODE SHEET NO. 4B **BRIDGE NO.** 7803.2S006

Completed On 6 /28/2006 **By** P. Gettler

CODE SHEET NO. 4B BRIDGE NO. 7803.2S006

PILE BENT PIER NO . 11

5H **Over - All** ____ Concrete Trestle Pile

6F **Foundation (Piles)** ____ Steel Shell Bearing Pile

Concrete - Vertical Cracks	Not visible
Concrete - Map Cracks	Not visible
Concrete - Other Cracks	Not visible
Concrete - Spalling/Scaling/Hollow	Not visible
Steel - Rust	General moderate to severe rust where visible
Wood - Splits/Checks	N/A
Wood - Rotten or Hollow Areas	N/A

5D **Face (Include Cap Area)** ____ Concrete

Concrete - Vertical Cracks	Hairline cracks over most piles. Cracks 1/16" wide over piles 2,3 and 4, these cracks are widest at the bottom of the cap
Concrete - Map Cracks	
Concrete - Other Cracks	
Concrete - Spalling/Scaling/Hollow	
Steel - Rust	N/A
Wood - Splits/Checks	N/A
Wood - Rotten or Hollow Areas	N/A

NB **Web / Struts** ____ None

X-Bracing

NB **Bridge Seat** ____ None

Spalls/Scaling/Hollow Areas

Dirt and Debris

Loss Of Bearing

NB **Bearing Devices** ____ None

Rust

Setting

COMMENTS

CODE SHEET NO. 4B **BRIDGE NO.** 7803.2S006

Completed On 6 /28/2006 **By** P. Gettler

CODE SHEET NO. 4B BRIDGE NO. 7803.2S006

PILE BENT PIER NO. 12

5H **Over - All** ____ Concrete Trestle Pile

5F **Foundation (Piles)** ____ Steel Shell Bearing Pile

Concrete - Vertical Cracks	
Concrete - Map Cracks	
Concrete - Other Cracks	
Concrete - Spalling/Scaling/Hollow	previously reported spalls with exposed rebars below the cap in piles 1 and 5
Steel - Rust	Most of the steel encasements above ground have severe section loss
Wood - Splits/Checks	N/A
Wood - Rotten or Hollow Areas	N/A

5D **Face (Include Cap Area)** ____ Concrete

Concrete - Vertical Cracks	previously reported cracks 1/16" to 1/8" wide over all piles, these cracks are widest at the bottom of the cap
Concrete - Map Cracks	
Concrete - Other Cracks	extensive hairline random cracking
Concrete - Spalling/Scaling/Hollow	previously reported unsound areas in bottom of cap on both sides of pile 2 near face
Steel - Rust	N/A
Wood - Splits/Checks	N/A
Wood - Rotten or Hollow Areas	N/A

NB **Web / Struts** ____ None

X-Bracing

NB **Bridge Seat** ____ None

Spalls/Scaling/Hollow Areas

Dirt and Debris

Loss Of Bearing

NB **Bearing Devices** ____ None

Rust

Setting

COMMENTS

There is a mastic deck joint over this pier. Large areas of efflorescence on cap

CODE SHEET NO. 4B **BRIDGE NO.** 7803.2S006

Completed On 6 /28/2006 **By** P. Gettler

CODE SHEET NO. 4B BRIDGE NO. 7803.2S006

PILE BENT PIER NO. 13

5H **Over - All** ____ Concrete Trestle Pile

6F **Foundation (Piles)** ____ Steel Shell Bearing Pile

Concrete - Vertical Cracks	Not visible
Concrete - Map Cracks	Not visible
Concrete - Other Cracks	Not visible
Concrete - Spalling/Scaling/Hollow	Not visible
Steel - Rust	General moderate to severe rust where visible
Wood - Splits/Checks	N/A
Wood - Rotten or Hollow Areas	N/A

5D **Face (Include Cap Area)** ____ Concrete

Concrete - Vertical Cracks	Hairline cracks over most piles. Previously reported crack 1/16" wide over pile 2, this crack is widest at the bottom of the cap
Concrete - Map Cracks	
Concrete - Other Cracks	a few hairline random
Concrete - Spalling/Scaling/Hollow	
Steel - Rust	N/A
Wood - Splits/Checks	N/A
Wood - Rotten or Hollow Areas	N/A

NB **Web / Struts** ____ None

X-Bracing

NB **Bridge Seat** ____ None

Spalls/Scaling/Hollow Areas

Dirt and Debris

Loss Of Bearing

NB **Bearing Devices** ____ None

Rust

Setting

COMMENTS